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GEOGRAPHICAL RECORD

THE AMERICAN GEOGRAPHICAL SOCIETY

Retirement of Mr. Cyrus C. Adams. On December 3, 1915, Mr. Cyrus C. Adams retired from the staff of this Society after seven years' service as editor of the *Bulletin*, following in turn an earlier connection as editorial contributor dating from 1902. Though he discontinues the arduous duties of editorial management his name will still be found among the list of contributors—we hope for many years to come. His services to the Society have been varied and important, and under his hand the *Bulletin* grew from a slender magazine issued five times a year to a monthly of sixty-four and finally eighty pages.

The growth of the *Bulletin* was due partly to the rapid development of geography in higher education but largely to Mr. Adams' own contributions. The news sense which his journalistic training had developed made itself felt in the timeliness and interest of the items in the "Geographical Record," many of which he wrote himself. Polar exploration and the economic development of new regions, especially Africa, have been his special topics. His early manhood coincided with the heroic age of African exploration, and he read with avidity the accounts of the great travelers. In its pages the *Bulletin* has often reflected the affectionate intimacy of his knowledge of African geography.

One of his aims has been to raise the standards of commercial map-publishing, which were as low as the standards of government cartography are high. To this end he developed the department of "New Maps," aiming to present in it critical reviews of the most important current maps. Akin to this activity was his organization of the exhibit of foreign wall maps and atlases, which circulated among various educational institutions and helped to call the attention of teachers to the effectiveness of these important adjuncts of the text-book.

It is difficult to compress within reasonable limits even an outline of the service he has rendered the Society. It is perhaps enough to conclude that he has been one of the educational factors of the present age of rapid geographical development and has made contributions of lasting importance.

NORTH AMERICA

Our Fur Seals. Two papers on this subject were read at the meeting of the American Association for the Advancement of Science in San Francisco in August last. George Archibald Clark of Stanford University, discussing "Conservation and Utilization of Our Fur Seals," said that the seal herd, which has yielded \$26,000,000 to the United States treasury since the transference from Russia in 1867, is now reduced to one-tenth its original size owing to indiscriminate hunting in the open sea of female seals and their offspring. As is well known, pelagic hunting was forbidden by law, and Congress in 1912 also suspended land-sealing, which has involved an annual loss of \$500,000 and is detrimental to the seal herd through the overstock of males. The inability of the Treasury Department and later of the Department of Commerce to deal effectively with the problem had been demonstrated. He urged that the management of the seal herd be transferred to the Department of Agriculture, which has experts and facilities necessary to deal with the matter. Mr. W. H. Osgood of the U. S. Biological Survey said in his paper that the fur seals on the Pribilof Islands in 1914 numbered 295,000 seals, of which 93,250 were breeding females. This is an increase of nearly 40 per cent. in two years. It is reasonable to hope that with proper management a nearly or quite complete regeneration of the herd may be effected.

Vulcanism in the Yukon Basin. While Quaternary lavas have been recognized in several localities within the Yukon Basin the most recent vulcanism yet recorded is that first noted, in 1883, by Schwatka, who made observations on the ash deposits of the Lewes River, subsequently defined by the successive studies of Dawson, Hayes, Brooks, and Capps. Mr. Stephen R. Capps (An Ancient Volcanic Eruption in the Upper Yukon Basin, *U. S. Geol. Surv. Prof. Paper 95-D*, pp. 59-64) estimates the area still appreciably affected at 140,000 square miles and the volume of ejected material at about 10 cubic miles, thus placing the occurrence in a category with such classic eruptions as those of Krakatoa (1883) and Katmai (1912). Over large areas the ash appears as a remarkably uniform white layer, entirely sympathetic with the present topography. Apart from sporadic exceptions, explainable by wind action, the layer is

single and apparently due to one period of eruption and unaccompanied by lava flows. The sudden and rapid thickening of the deposit to a maximum of 200-400 inches towards the northern border of the St. Elias Mountains locates the source with considerable certainty. The actual vent is not improbably in a small crater recently observed in a glacial cirque four miles north-northeast of Mt. Natazhat. From this locus, and indicating west and south winds during the eruptive period, the ash spread over an extensive area to the east and north. The recency of the eruption is proved by physiographic and botanical data. The rivers have not had time to lower their beds appreciably since the deposition of the ash, and over large tracts the ubiquitous tundra moss has not yet secured a foothold. Hayes gives an actual time limit in his observations on the Klutlan Glacier. The glacier surface, now ash-free save in the terminal moraine, represents a movement requiring at least some hundreds of years. Capps, applying his determinations on the rate of peat growth to accumulations upon the ash, places the date at approximately 1,400 years ago.

Miss Jobe's 1915 Expedition to the Canadian Rockies. During July and August Miss Mary L. Jobe again made an expedition to the "Mt. Kitchi" region, which she described in the July *Bulletin* of the Society (Vol. 47, 1915, pp. 481-497, with map, 1:300,000). Accompanied by two guides and one woman and three men companions she followed the same route as on her first expedition from the Grand Trunk Pacific Railway to "Crescent Lake Pass." Thence a new route, on the divide via Sheep Creek Pass and a pass to the Poreupine, was followed to the northeast base of "Mt. Kitchi." Two attempts to climb the peak were unsuccessful, although on the second an altitude within 200 feet of the top was reached. From "Mt. Kitchi" the party continued north to Jarvis Pass, Mt. Ida and the head of the Wapiti River, traversing in part unmapped territory. The return route via Sheep Creek, the Muddy Water, Grand Cache, the Sulphur and Big Smoky Rivers also in part crossed untraveled areas. Bearings were taken from numerous higher points and detailed observations were made of the region west of Mt. Ida and at the head of the Wapiti.

The Preservation of American Wild Life. Dr. W. T. Hornaday lectured on this topic in Albuquerque, N. M., on October 19, under the auspices of the University of New Mexico, the Albuquerque Game Protective Association, and the U. S. Forest Service. On his initiative a bill will be introduced at the next session of Congress authorizing the Secretary of Agriculture to take over those parts of the national forests that are not adapted for other purposes and establish in them game sanctuaries where game will be bred and set free from time to time over a period of several decades. Dr. Hornaday is confident that, by this method, American game can be preserved.

A Tree Calendar for the Eastern United States. Mr. George N. Lamb of the U. S. Forest Service has prepared an important chart, or calendar, which shows, for the common trees of the eastern United States, the dates of leafing, flowering, "in foliage," seed ripening, seed falling, and leaf falling (*Monthly Weather Rev., Suppl. No. 2*, 1915). The chart is the result of a compilation of data obtained by observers of the Forest Service and also by individuals working alone. The major activities of plants indicate clearly the advance of the season, for these activities depend upon the interaction of a number of weather elements, e. g., temperature, precipitation, humidity, and evaporation. Trees, being the most conspicuous plants and living for many years, lend themselves to phenological observations. There is thus a large body of available material for study along these lines. The tree calendar will be useful to botanists, especially foresters, and to meteorologists, and will also have interest for intelligent observers of plant growth. The botanical range of the various trees is given, and a bibliography is included. Copies of this chart might well be framed and hung on the walls of our schools. Interest in outdoor observation would certainly be stimulated by this means, and comparative observations, made each year by the scholars, of the critical stages of tree development, might well be recorded and kept on file with the chart. The Weather Bureau is doing good work in publishing such a contribution. R. DEC. WARD.

Water Power in the Cascades. The U. S. Geological Survey in coöperation with the Washington State Board of Geological Survey has completed its survey of the water resources of this area (F. F. Henshaw and G. L. Parker: *Water Powers of the Cascade Range, Part II, U. S. Geol. Surv. Water-Supply Paper 313*). This report deals chiefly with the drainage basins of the Cowlitz, Nisqually, Puyallup, White, Green, and Cedar Rivers. The streams of the Cascades have the requisite characteristics for the successful development of water power, viz., steep gradient, abundant water, and comparatively uniform flow. The enormous resources of timber, metals, and lands as yet undeveloped will make the water power of this region very valuable.

The First Year of the Panama Canal. The *Canal Record* (end of August, 1915) analyzes the business of the Panama Canal for the first year of its commercial operation ending on August 14, 1915. During the year 1,317 vessels of 4,596,444 net tonnage passed through the canal. The number of vessels passing from the Pacific to the Atlantic was 661, while 656 vessels passed from the Atlantic to the Pacific. The tolls earned during the year amounted to \$5,216,149. The total tonnage of the principal commodities passing through the canal up to July 1, 1915, was as follows: nitrates, 651,948; sugar, 298,864; coal, 286,564; refined petroleum, 252,428; wheat, 230,222; iron and steel manufactures, 202,202; iron ore, 86,104; raw cotton, 48,846; canned goods, 46,998; cacao, 26,928.

Vessels of fifteen nations passed through the canal: American vessels, 481; British, 464; Norwegian, 41; Chilean, 35; Danish, 24; Swedish, 18; and the Dutch, Japanese, Russian, Peruvian, French, Honduran, Italian, Nicaraguan, and Panamanian marine made up the remainder.

About four and one-half times as much tonnage went through the Suez Canal in 1914 as went through the Panama Canal during the first year of its operation. The number of ships using the Suez Canal was about three and two-fifth times as many as used the Panama Canal. The total receipts at Suez were four and five-eighth times the amount of tolls earned by the Panama Canal during its first year.

Suspension of Traffic in the Panama Canal. A serious slide occurred in the canal at the Gaillard Cut (formerly called the Culebra Cut) on September 5 and another on September 18 north of Gold Hill on the east bank. The mass almost entirely filled the channel so that the earth showed above the water where ships ordinarily pass. It was of course necessary to suspend traffic. By the end of December, however, a channel had been dredged large enough to admit of large vessels. According to the "Official Handbook of the Panama Canal, 1915" (p. 46), the slides in the Gaillard Cut up to February 1, 1915, have required 35,158,225 cubic yards of additional excavation. To that date the total excavation from the cut had been 117,077,044 cubic yards. Gaillard Cut forms the passageway between the opposite slopes of the continental divide. It is 8 miles long, 300 feet wide at the bottom and from 45 to 65 feet in depth. The great depth of the cut is responsible for the magnitude of the slides, which are breaks in the banks due to the pressure of the material.

SOUTH AMERICA

Condition of the Pan-American Railroad between Buenos Aires and Lima. The well-known project of a continuous railroad system connecting North and South America (cf. reports of the Intercontinental Railway Commission, 4 vols., with 3 map cases, Washington, 1895-98), while not being carried out as a unit undertaking, is approaching realization through the normal development of the railroad systems in the various countries concerned. A note in *Weltwirtschaft* for October, 1915 (p. 146), calls attention to the near state of completion of the line between Buenos Aires, Argentina, and Lima, Peru. Of the whole distance of 2,690 miles, 1,904 miles, or 70 per cent., are completed, and 282 miles are under construction; of the remaining 504 miles, 62 are surveyed and 442 not yet surveyed. The condition of the line, proceeding from south to north, is as follows: Buenos Aires to La Quiaca, on the Argentine-Bolivian boundary, completed, 1,088 miles; La Quiaca to Tupiza, surveyed, 62 miles; Tupiza to Uyuni, under construction, 127 miles; Uyuni via Oruro and Viacha to Guaqui, near the Peruvian-Bolivian frontier, completed, 360 miles; Guaqui to Puno, reconnaissance survey, 99 miles; Puno to Cuzco, completed, 238 miles; Cuzco to Ayacucho, unsurveyed, except for a short section beyond Cuzco, 340 miles; Ayacucho to Huancayo, under construction, 162 miles; Huancayo, to Lima, completed, 214 miles. Lima is not strictly on the intercontinental line, which passes through Oroya, 128 miles inland from Lima. A northerly continuation is already completed to Cerro de Pasco, 83 miles beyond Oroya.

EUROPE

Discovery of a Substitute for Chilean Nitrate of Soda in Germany. A pamphlet recently issued by the German government announced that agriculture in Germany would not suffer from the inability at present to procure Chilean nitrate of soda, because a satisfactory substitute for this fertilizing element had been discovered. The announcement seems to have been based upon Professor Gerlach's report to the German Agricultural Society of Berlin, on September 18, of the discovery that both sulphate of ammonia and cyanimide will supply a satisfactory substitute for nitrate of soda. Experiments had shown, he said, that sulphate of ammonia produces on an average 89

per cent. of the effect of nitrate of soda, and cyanimide 75 per cent. He estimated the production of cyanimide in German factories at 120,000 tons yearly. German farmers, he added, must use nitrogen fertilizers liberally since it returns six-fold its weight in highly digestible albumens.

PHYSICAL GEOGRAPHY

Truncation of Spur Ends by Glacial Erosion. Mr. P. G. Morgan, director of the Geological Survey of New Zealand, calls attention to the following early recognition, in 1866, of the truncation of spur ends in valleys formerly occupied by glaciers. The extract is from an article "On the Formation of Lake-Basins in New Zealand," by W. T. Locke-Travers, in the *Quarterly Journal of the Geological Society* of London, Vol. 22, 1867, p. 258:

"I will now mention the facts observed by me in the valleys of the Dillon and Clarence, as these valleys present features of exceeding interest in connection with former glacial action. As a general rule in this country [New Zealand] in valleys which have never been occupied by glaciers, the spurs of the ranges on each side interlock; whilst in those which have been occupied by glaciers we constantly find the points of the spurs on one side or other of the valley cut off, the faces of the spurs then being Λ -shaped, and rising at a very steep angle. I have observed the latter feature to obtain in all the valleys in which I have found old moraines, and I think it may be a good guide in determining the longitudinal extent of former glacier action."

Mr. Morgan adds that Travers subsequently wrote several other papers dealing with glaciation in New Zealand (see *Trans. New Zealand Inst.*), but I do not think he ever repeated the lucid statement quoted above; much less did he enlarge on it.

W. M. DAVIS.

Torrents and Floods. Geographers will find an interesting account of the work of torrents and floods, with citations from many sources, in an important geological work entitled "Formation of Coal Beds," by J. J. Stevenson, originally printed in the *Proceedings of the American Philosophical Society* of Philadelphia for 1911, 1912, and 1913, and now issued as a separate volume of 530 pages. The protective effect of vegetation against erosion is illustrated by examples from the White Mountains, the southern Appalachians, France, and elsewhere. River floods are discussed with especial reference to their power of uprooting forests, and with the conclusion that no floods are strong enough to uproot trees, except where they are undermined along a river bank. The source and distribution of driftwood are described, especially on Arctic shores. Peat deposits are treated in much detail, but rather from a geographical than from a botanical point of view. All these and many other matters are considered in order to obtain a present-day observational basis for the explanation of coal deposits. The opinion reached is that "coal beds and the associated rocks are of land origin; the detrital deposits are those made by flooding waters on wide-spreading plains; the coal beds, in all essential features, bear remarkable resemblance to peat deposits" (p. 506).

W. M. DAVIS.

Recent Studies of Atmospheric Radiation. Dr. Anders Ångström of Upsala was a member of the Smithsonian Astrophysical Observatory expedition which, in 1912 and 1913, in Algeria and in California, made observations of the radiation of the sun. Dr. Ångström's report appears as Vol. 65, No. 3, of the *Smithsonian Miscellaneous Collections* (1915). The author finds, among other results, that the variations of the total temperature of the atmosphere are at low levels (below 4,500 meters), principally caused by variations in temperature and humidity, and that the total radiation from the atmosphere is nearly proportional to the fourth power of the temperature at the place of observation. An increase in the water-vapor content of the atmosphere increases its radiation, and an increase in the water-vapor pressure causes a decrease in the effective radiation from the earth to every point of the sky. There is no evidence of maxima or minima of atmospheric radiation during the night that cannot be explained by the influence of the conditions of temperature and humidity. Daytime radiation seems to be subject to the same laws that hold for nocturnal radiation. The effect of clouds is very variable, depending upon their altitude and their density. Nocturnal radiation was reduced by the Katmai dust by less than 3 per cent. It appears, therefore, that the effect of haze upon the effective radiation to the sky is almost inappreciable when no clouds or fog are formed.

R. DEC. WARD.

Sunspots and Rainfall. The question of the relation of sunspots and rainfall is considered by Dr. Gilbert T. Walker, Director-General of Indian Observatories, in Vol. 21, Part 10, of the *Memoirs of the Indian Meteorological Department*. The data of

annual rainfalls at isolated, representative stations all over the world are examined for periods which, in general, do not go back of 1850. The results are presented in tabular form and are also charted, the coefficients being given to the nearest .05. To quote the author, the impression left by an examination of the chart "may be one of disappointment at the comparative insignificance and inconsistency of the results." It appears that the coefficient of rainfall with sunspots is not, in general, much larger than would result from chance. Where the coefficients have an appreciable tendency towards uniformity, a real relationship may be inferred. This relationship seems real in the cases of the Nile and India. The clearest case is South America. Below lat. 30° S. the rainfall is deficient when sunspots are numerous. A full discussion of the problem is to be postponed by the author until a later date. R. DEC. WARD.

Volcanic Dust and Climatic Variations. Mr. Henryk Arctowski's important studies of temperature variations and their correlations are being continued, with further interesting results. The most recent paper (*Annals N. Y. Acad. Sci.*, Vol. 26, 1915, June 21, pp. 149-174) takes up the question of the possible effect of volcanic dust upon terrestrial temperatures, a subject to which W. J. Humphreys, C. G. Abbot, F. E. Fowle, and H. H. Kimball, in this country, have lately paid attention. The problem was to ascertain, if possible, whether temperature variations are due to terrestrial causes, as in the case of volcanic dust veils, or to cosmical causes. The temperatures at a considerable number of stations are plotted for the years before, after, and also including, the Krakatoa, Mont Pelé, and Katmai eruptions. Curves are drawn showing the world's mean temperatures and the variation of frequency of volcanic eruptions (ten-yearly totals). The discussion of the relation of sunspots and atmospheric temperature is considered briefly. The author concludes that the Krakatoa dust veil very greatly affected temperature, but that the eruptions of 1902 and the Katmai eruption of 1912 had a very slight effect, if any, upon the mean annual temperatures. The "pleionian" variations of temperature have nothing in common with the presence or absence of dust veils. There is a presumption in favor of a correlation between "pleionian" and "macroleionian" (long range) variations of temperature and volcanic eruptions. As yet, however, there is difficulty in imagining how such a correlation could be explained. R. DEC. WARD.

GEOGRAPHICAL NEWS

A New Series of Regional Geographies. Under the editorship of Professor Vidal de la Blache, the dean of French geographers and a recent Charles P. Daly medalist of the Society, a new series of regional geographies is to appear bearing the imprint of Armand Colin, Paris. The series, which will be entitled "Géographie Universelle" and comprise twelve volumes, will embody the most advanced methods in the presentation of regional geography. Unlike the classical prototype from which it derives its name, Reclus' survey of world geography in nineteen volumes, it will be written by a number of specialists. Although the detailed list is not yet available, the following contributors may be mentioned: Henri Baulig, North America or the United States; Albert Demangeon, the British Isles; Augustin Bernard, North and West Africa; and Jean Brunhes, the Mediterranean and the Mediterranean countries of Europe. Publication was to begin, it was hoped before the war broke out, toward the end of 1915.

Change of Title of "Popular Science Monthly." Beginning with the October number, *Popular Science Monthly* has changed its title to *The Scientific Monthly*. Its character, editorial management, and typographical appearance will remain the same. The change has interrupted the final volume (87) of *Popular Science Monthly*, which would ordinarily have extended from July to December. Thus at least one series of articles continues in the new volume. The October number of *The Scientific Monthly* is designated Vol. 1, No. 1. The Science Press continues to be the publisher. The old title has been assumed by a—literally—popular magazine of applied science heretofore called *World's Advance* and edited by a former managing editor of the *Scientific American*.

A Memorial of Professor Tarr. A granite boulder has been placed on the campus of Cornell University as a memorial of the late R. S. Tarr, professor of geology and physical geography at the university from 1892 to 1912. A bronze tablet will be set into the boulder inscribed: "Ralph Stockman Tarr, 1864-1912. Scientist—Writer—Teacher. This boulder, a relic of the Ice Age, symbolic of his research in glacial geology and of the enduring value of his work, is placed here as a memorial of their friend and adviser by his students."

PERSONAL

MARQUIS CAPPELLI has resigned the presidency of the Royal Geographical Society of Italy.

PROFESSOR HENRY C. COWLES, of the University of Chicago, lectured before the Geographic Society of Chicago, on October 8, on "Romance and Reality from the Mississippi Bottom Lands."

PROFESSOR ELIZABETH F. FISHER of Wellesley College is giving two courses of lectures in the Teachers' School of Science (Lowell courses in the university extension), Boston, one on "The Physical Geography of the Lands" based on concrete examples, attended by sixty students, and the other on "The Economic and Historical Geography of Greater Boston," attended by eighty students.

DR. W. T. GRENFELL will spend the winter in the United States and Canada making a transcontinental lecture tour to raise funds for his Deep-Sea Mission in Labrador.

DR. SVEN HEDIN has been elected a corresponding member of the Royal Academy of Sciences in Vienna.

DR. ELLSWORTH HUNTINGTON has been awarded the Elisha Kent Kane medal of the Geographical Society of Philadelphia. After the presentation, on November 3, Dr. Huntington lectured before the society on "Climate, Weather, and Daily Life."

PROFESSOR THEODOR KOCH-GRÜNBERG has been appointed scientific director of the Museum für Länder- und Völkerkunde in Stuttgart.

OBITUARY

COLONEL SIR CLAUDE M. MACDONALD died in England of heart failure on September 10, aged 63. While best known as a diplomatist, he did geographical work of distinct value, when, in 1887-88, he made a voyage up the Benue tributary of the Niger, whose upper course and affluents were imperfectly known. He was the first to map the Mayo Kebbi, the northeastern branch of the Benue, which he ascended in a small steamer. He thus revealed the navigable stretch of that river; but it was reserved for the French explorer Captain Lenfant later to trace the remarkable water connection which the Mayo Kebbi forms between the Benue basin and the basin of Lake Tchad.

DR. CHARLES FREDERICK HOLDER, the naturalist and author, known for his books on marine zoölogy and related subjects, died at his home in Pasadena, Cal., on October 11, aged 64 years. He was a voluminous author. Among his works were *Elements of Zoölogy*, 1885; *Stories of Animal Life*, 1900; *Game Fishes of the United States*, 1913; *Game Fishes of the World*, 1913.

DR. EMIL RUDOLPH, honorary professor of geography in the University of Strassburg, has died at the age of 61 years.

PROFESSOR PAUL STANGE, geographer in the government service of Chile (1890-1898), has died in Germany, aged 54 years. While in Chile he was associated with the explorations of H. Steffen and P. Krüger in the Chile-Argentine boundary region of the Patagonian Andes. He published in 1914 his "Landeskunde von Chile," reviewed in the October *Bulletin* of the Society (Vol. 47, 1915, p. 783).